ISSN 0704-3716

Canadian Translation of Fisheries and Aquatic Sciences

No. 5316

Observations of marine mammals by the Norwegian Polar Institute's Svalbard Expeditions of 1981 and 1982

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Original title: Observasjoner av sjopattedyr pa Norsk Polarinstitutts Svalbard-ekspedisjoner 1981 og 1982

Ref: Fauna (Blindern) 36: 105-118 Oslo, 1983

Original language: Norwegian

Available from:
Canada Institute for Scientific and Technical Information
National Research Council
Ottawa, Ontario, Canada K1A 0S2

1987

30 typescript pages

Secretary of State / Secrétariat d'État

90-02111/

MULTILINGUAL SERVICES DIVISION – DIVISION DES SERVICES MULTILINGUES

TRANSLATION BUREAU BUREAU DES TRADUCTIONS

LIBRARY IDENTIFICATION – FICHE SIGNALÉTIQUE

Translated from - Traduction de	Into - En
Norwegian	English

Author - Auteur
Uggeland & Ree

Title in English or French - Titre anglais ou français
Observations of marine mammals by the Norwegian Polar Institute's Svalbard Expeditions of 1981 and 1982.

Title in foreign language (Transliterate foreign characters)
Titre en langue étrangère (Transcrire en caractères romains)
Observasjoner av sjøpattedyr på Norsk Polarinstitutts Svalbard-ekspedisjoner 1981 og 1982.

Reference in foreign language (Name of book or publication) in full, transliterate foreign characters.
Référence en langue étrangère (Nom du livre ou publication), au complet, transcrire en caractères romains.

Fauna 36, 105-118, Oslo, 1983

Reference in English or French - Référence en anglais ou français

Fauna 36, 105-118, Oslo, 1983

Publisher - Éditeur	DATE OF PUBLICATION / DATE DE PUBLICATION			Page Numbers in original / Numéros des pages dans l'original
Norwegian Polar Inst.	Year / Année	Volume	Issue No. / Numéro	105–118
Place of Publication / Lieu de publication				Number of typed pages / Nombre de pages dactylographiées
Oslo, Norway	83	36		30

Requesting Department / Ministère-Client: DFO

Translation Bureau No. / Notre dossier nº: 2909980

Branch or Division / Direction ou Division: IPB

Translator (Initials) / Traducteur (Initiales): BP

Person requesting / Demandé par: N. Johnson

Your Number / Votre dossier nº: 3.87

Date of Request / Date de la demande: 19/12/86

SEP - 4 1987

Canada

SEC 5-111 (84-10)

Client's No.–N° du client	Department – Ministère	Division/Branch – Division/Direction	City – Ville
2909980	DFO	IPB	Winnipeg
Bureau No.–N° du bureau	**Language – Langue**	**Translator (Initials) – Traducteur (Initials)**	FEB - 4 1987
LSM 6-1338	Norwegian	BP	

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TRADUCTION NON REVISÉE
Information seulement

Observations of marine mammals by the Norwegian Polar Institute's Svalbard Expeditions of 1981 and 1982.[1)]

KARL INNE UGLAND AND VIGGO REE

Ugland K I & Ree, V 1983 Observations of marine mammals on the Norwegian Polar Research Institute's Svalbard expeditions in 1981 and 1982 *Fauna 36*: 105 – 118

Biologists at the Norwegian Polar Research Institute have been working for several years on mapping the living resources in the Svalbard area One of the main purposes is to give the Norwegian Government advice on the management of these resources Systematic counts of marine mammals and polar bears in the drift ice was initiated on the »Ymer» expedition in 1980 The Polar Research Institute and the University of Oslo have started a collaboration to develop quantitative transect methods for Arctic areas This paper presents the observations from the two summer expeditions in 1981 and 1982 with »Lance» The total numbers of observed animals are 58 (1 - 57) walruses 1028 (333 - 695) ringed seals 6400 (6000 - 400) harp seals, 498 (227 - 271) bearded seals 354 (40 - 314) hooded seals, 44 (4 - 40) belugas, 4 (0 - 4) narwhales, 27 (4 - 23) minke whales and 7 (3 - 4) fin whales A short account of the biology of these species is also included

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For several years the Norwegian Polar Institute (NP) has been working on mapping animal life in regions of the arctic seas. In 1980 the NP began a large project of recording marine mammals and sea birds. A specially developed program for line estimation was first used on board "Norvarg" and "Ymer" in 1980 (Edelstam 1981, Hammar 1982a). In 1981 and 1982, these studies were followed up by NP's new research vessel "Lance"

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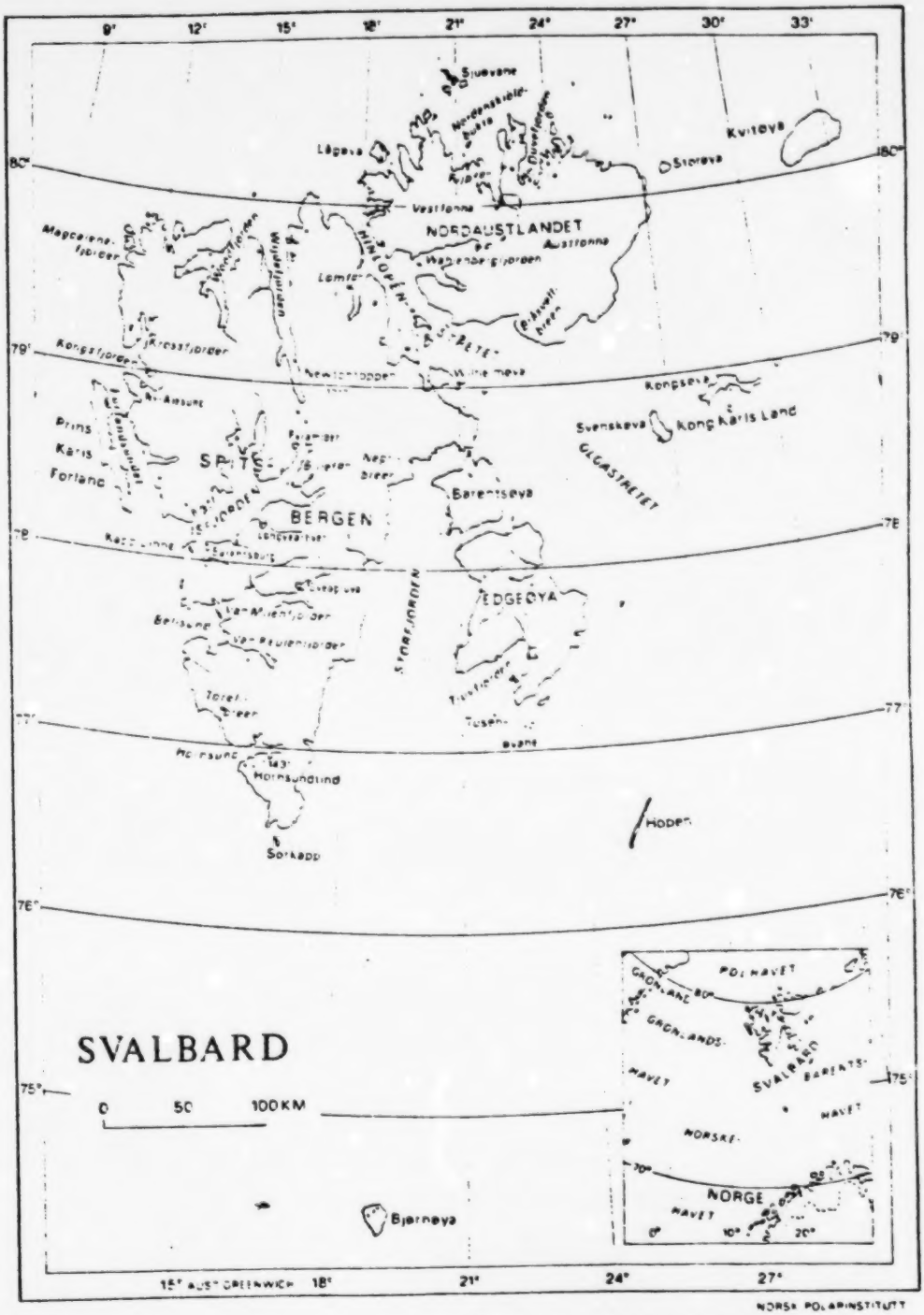
1) Norwegian Polar Institute Contribution No. 226.
Fauna 36, 105-118, Oslo 1983.

(Larsen, 1983, Mehlum 1983). The observations of marine mammals on these two expeditions form the basis for this article.

Attempts were made to shed some light on three central questions: 1) The spread of the species on the drift ice.
2) The migratory pattern among the various species.
3) The size of the populations.

The management of animal life in the arctic regions is completely dependent on satisfactory answers to these questions. Line estimation at sea is, however, connected with a number of problems. The vessel moves at varying speeds according to ice conditions, and the animals move at different speeds and in different directions in relation to the vessel. Variations in visibility, precipitation, wind force and wave height are also deciding factors for the observation. Effective observation distance under different conditions must also be known. In addition, the marine mammals are spread over a far greater area than is possible to cover by the cruise schedules. The results also depend significantly on the participants in the biology groups, for instance, whether they have previous experience in field biology and observations. These factors make it difficult to study the various populations, and good research is therefore resource-intensive.

The observations from the vessel were almost exclusively carried out from the upper deck (on top of the wheelhouse). Aids used were prism binoculars, 10 x 40 and 12 x 40/50, in addition to a Simrad Laser range finder. The results of all



NORSK POLARINSTITUTT

Fig. 1 Kart over Svalbard-området.
Map of the Svalbard area

observations were recorded on special forms for fauna recording ("transect sheets") while the vessel was moving. In addition to determining species, possible age group and sex, the forms contain information on, among other things, behaviour, angle and distance to the observed animals, ice cover, weather conditions and position of vessel. These data are filed in the NP's computer. In this manner it will be possible to input several years of marine mammal observations which will contribute to increased knowledge of the ecology of this group of animals. However, it must be pointed out that Figures 4, 5, 7, 8 and 10 in this article are preliminary charts and were manually prepared.

A map of the Svalbard area showing the most important names is found in Figure 1. The reader is advised to see Figure 2 in order to be able to form an impression of the normal ice situation around the group of islands during the summer. 107.

There were two cruises each during the two summer expeditions. In 1981 the cruises were carried out during the periods 28.7 - 12.8 and 18.8 - 2.9. In 1982 the periods were 22.7 - 3.8 and 6.8 - 2.9. The two July-August cruises were in the Greenland Sea, while the two August-September cruises were in the areas north and east of Svalbard. The exact cruise schedules are not shown in this article. It is however, evident from Figures 4, 5, 7, 8, and 10 which seas and coastal areas "Lance" visited in the course of the two summer seasons.

It should also be mentioned that a number of observations were carried out from rubber dinghy and helicopter (particularly during cruise 2 in 1982).

In the presentation of the results from the individual species we have included a brief description of their biology. This information has been obtained from Benjaminsen (1973), Coffey (1977), Davis, Finley & Richardson

Figure 2

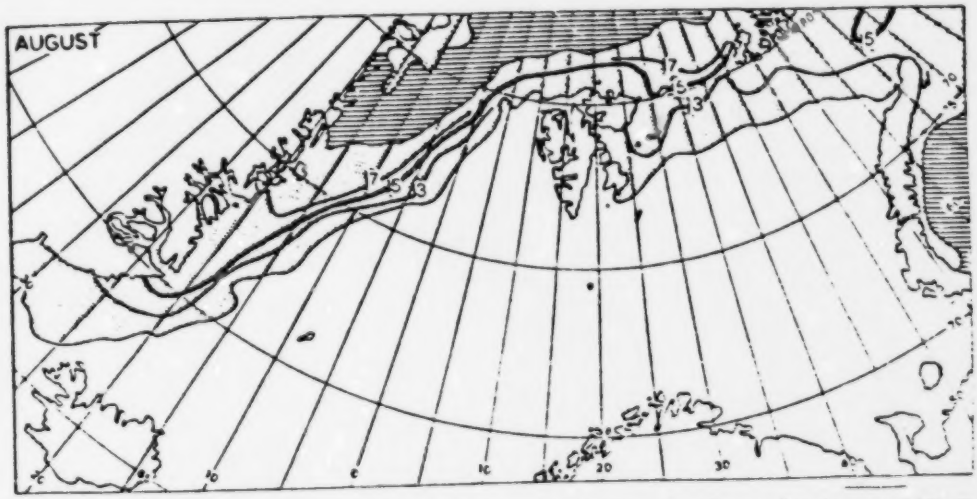


Fig. 2 Fordeling av iskonsentrasjoner større enn 4/10 i slutten av august basert på observasjoner i perioden 1971—1980. Prikket felt angir variasjonsområdet i perioden. Tallene angir hvor mange år (ut av 10) som isen har nådd sør til korresponderende kurve. Etter Vinje (1982a).

The frequency distribution of sea ice concentrations greater than 4/10 at the end of August based on observations from the period 1971—1980. The range of variation is indicated by the dotted area. The numbers indicate how many years (out of 10) that the drift ice has reached the corresponding curve. After Vinje (1982a).

(1980), Frislid & Semb-Johansson (1980), Haug (1982), Henning, Løken, Olds & Morgan (1978), King (1964), Møller (1981), Ridgway & Harrison (1981) and Øritsland (1959).

SEALS

The seals have a body shape which makes them capable of moving rapidly in water. The hind limbs (rear flippers) of true seals are stretched backwards and can not carry any of the body weight. They reach such great speeds that they have no problems with catching fish. On land, however, the seals do not have much grace. They must pull themselves forward using the front flippers. Seals are dependent on land or permanent ice when whelping.

A noteworthy adaptation among the seals is that the nursing period is very short, often only 10 days. At birth, the young have a thin layer of blubber. They must therefore grow fast during the short nursing period, and a doubling of the weight is not uncommon. This is made possible because seal milk is very nutritious and has a fat content of more than 50%.

In the waters around Svalbard, 6 seal species can be found: walrus (Odobenus rosmarus), the harbour seal (Phoca vitulina), the ringed seal (Pusa hispida), the harp seal (Pagophilus groenlandicus), the bearded seal (Erignathus barbatus), and the hooded seal (Cystophora cristata).

The harbour seal is sparsely spread in the northern regions. The only known occurrence near Svalbard is on Forlandsøyene west of Spitsbergen, where Krog and Bjarghov

(1973) discovered a small colony in 1972. However, together with the grey seal (Halichoerus grypus), the harbour seal constitutes the typical seal species along the Norwegian Coast.

With the exception of the harbour seal, all species were observed during the two summer expeditions. Species determination of seal, particularly in the water, can, however, be very difficult. Some of the observations during the 4 cruises are therefore recorded as undetermined seal (Phocidae sp.). These have not been included in the material.

The walrus population is now less than a thousandth of what the population was in the 17th century. As late as 1952 the species became a protected species, after several centuries of hunting. There is still some commercial hunting of harp seal and hooded seal on the drift ice. Previously the bearded seal was also overtaxed, but this hunt ceased in the 1970s. Nowadays limited sport hunting of ringed seal and bearded seal is carried out along the coast of Svalbard.

Walrus

The species is found in shallow waters along the arctic coasts. The long strong tusks are extended canines in the upper jaw. The walruses live together in large family groups. Breeding and mating take place in the spring. The females whelp one pup every third year. At birth the pups weigh about 50 kg and must then immediately learn to swim. The nursing period lasts almost two years.

The tusks are used to stir up mussels and crayfish. The

Figure 3

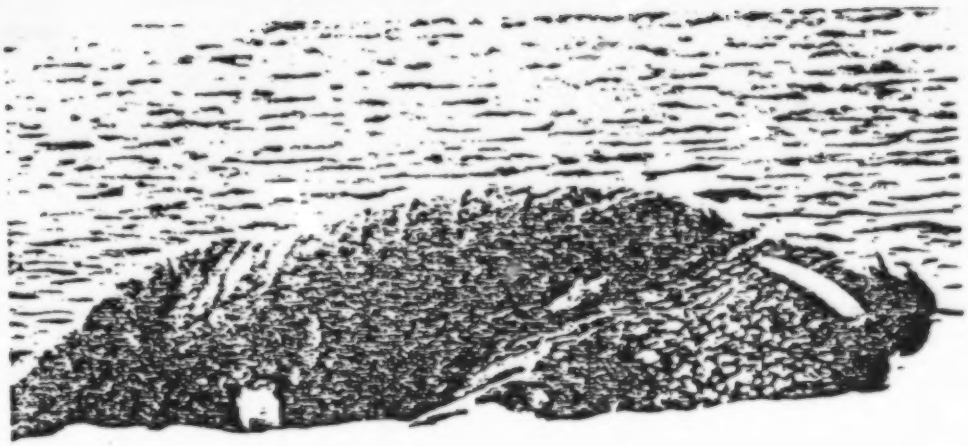


Fig. 3. Hvilende hvalrosser på isflak i Murchisonfjorden, Nordaustlandet den 8.8.1982. Som det tydelig går fram på fotografiet er dyret i forgrunnen en hann. Hunnene har også tydelig kjønnsåpning. (Foto: Karl Inne Ugland)

Resting walruses on ice floe in Murchisonfjorden, Nordaustlandet on 8.8.1982. The photograph shows clearly that the closest animal is a male. The female also shows a distinct sexual opening.

walrus also uses them to haul itself up on the ice floe. Older males may sometimes specialize in catching other smaller seal species.

In 1981 only one individual was observed. This was a young animal resting on an ice floe in the north of Hinlopen (21.8).

In 1982 a total of 57 individuals were found during the period 8.8-1.9. Smaller concentrations occurred at Murchison Bay (18; see Fig.3) and Kap Bruun (7) [both localities on the Nordaustland (Northeast Land)], Tusenøyane (18) and Moffen (7). The other observations were mainly single individuals scattered along coastal areas between these points. One exception was a male found sleeping on an ice floe north of Sjuøyane on 31.8 (water depth approximately 800 meters).

According to Norderhaug (1982), a total of 37 walruses were observed on Svalbard between 1960 and 1969. During the 109.
summer of 1970 about 50 walruses were seen near Kvitøya. During the 1970s, small concentrations were also reported to have been seen in several places in the archipelago. Norderhaug suggests that these observations provide good reason for optimism and points out that the increase is probably due to the protection as well as some immigration from Franz Josef Land. Observations from 1982 also indicate that the species is in the process of gaining a new foothold on the group of islands. The status of the species in the Svalbard region will also be dealt with by Born (1983).

Ringed seal

The ringed seal (or "snadden" as the hunters call it) is the most widespread seal species along the arctic coasts. In addition, it can be found wherever there are open leads in the ice; it has even been observed all the way to the North Pole. The species is also found in the Baltic Sea area and two nearby inland lakes (Saimaa and Ladoga). This wide spread has led to a splitting into several populations.

During the winter season it is most numerous in the ice-covered fiords. In Greenland, the ringed seal is therefore called the fiord seal. The species is particularly well adapted to life in the Arctic because the animals are capable of keeping their breathing holes open all winter. The ringed seal can therefore overwinter in areas only visited by other marine mammals during the summer.

Whelping takes place on permanent fiord ice during March - April. The female makes a cave in a snow-drift in a pressure ridge and here gives birth to the young. In this lair the pup lies sheltered. The only entrance is the breathing hole inside the lair, and the mother can therefore enter and exit without being seen. Whelping directly on the ice may also occur (Giertz and Lydersen 1983).

At birth, the pup has a yellowish-white long haired woolly coat which is shed after 2-3 weeks. The nursing period lasts slightly less than two months. The mother leaves her young in the early part of the summer, and at this time the

shedding of the hair begins (June-July). At the same time the young animals move towards the edge of the permanent ice. Many remain here several years before they return. The diet consists of fish and free living crustaceans. Adult animals are more tied to the coastal regions all year round. During the winter they may be spread out on the fiord ice in large numbers. During the summer months the greatest concentrations can be found along the edges of the glacier where the production of nutrients is great.

Our observations of ringed seal are shown in Figure 4 and 5. The specie: appears to be spread around the archipelago and out on the drift ice, primarily on the east side of Svalbard. Relatively few individuals have been observed in the fiords proper. It must, however, be added that the number of visits to the fiords was limited, and that swimming animals are more difficult to discover than those on the ice. The results of the observations may nevertheless indicate that a number of the adult animals can also be found on the drift ice during the summer. In this connection it is of interest to note the large occurrence as far from land as 79°N 38°E.

It should also be mentioned that some ringed seals were observed in completely ice-free waters (for instance, west of Prince Charles Foreland and in the Storfjord). This may be animals on local hunt for food or animals on their way to the drift ice after having finished shedding their hair.

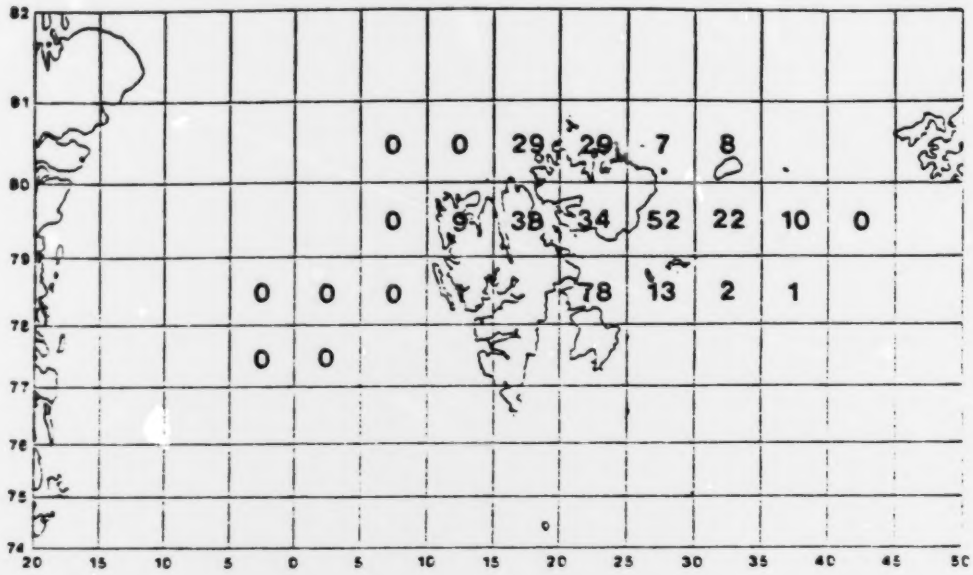
Harp seal

The harp seal is the most numerous seal in the arctic seas. They are sociable animals which move in herds of from 5 to several thousand individuals. The area of spread stretches from the Kara Sea in the east to Newfoundland in west. It is considered to be three independent populations. (1) An eastern population which whelps on the drift ice at the entrance to the White Sea . (2) The Western Polar Ice population with their whelping area in the drift ice near Jan Mayen and (3) a Canadian population which whelps in the drift ice areas in the Gulf of St. Lawrence and outside Newfoundland.

The whelping period is in March. The young come into the world with a white woolly coat (whitecoats). The mother leaves her pup after a nursing period of about 10 days. The pup now begins to shed its woolly coat and a darker coat appears (ragged jackets). The ragged stage lasts about 2 weeks and the pup does not take in any food during this period. Once it has developed a silver-grey black-spotted coat with stiff cover-hairs (greyling) it can swim well and live off free-swimming crayfish. After a couple of months it then begins to eat fish (capelin and arctic cod).

Mating takes place immediately after weaning. In the period between whelping and mating the harp seal lives quite a lot off the stored energy its the layer of blubber. Then it searches further out to sea for food.

Towards the end of April they gather in enormous



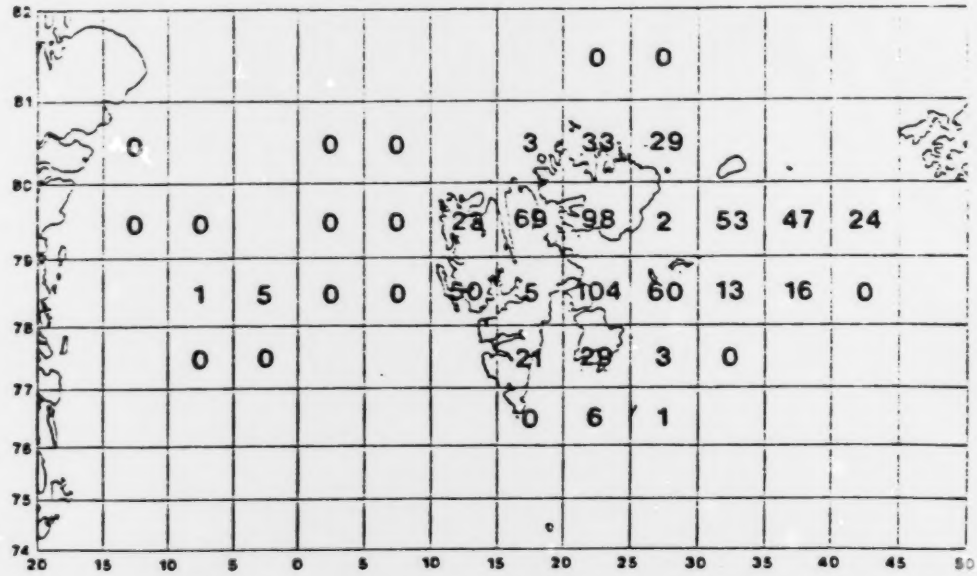


Fig. 4 (øverst) Antall observerte ringsel i 1981. Samtlige 333 dyr ble sett under tokt 2.
Fig. 5 (nederst) Antall observerte ringsel i 1982. Under tokt 1 ble 56 dyr sett, mens 639 ble observert under tokt 2.

Fig. 4 (top) Numbers of observed ringed seals in 1981. All 333 individuals were seen during the second cruise.

Fig. 5 (bottom) Numbers of observed ringed seals in 1982. During the first cruise 56 animals were seen, while 639 were observed during the second cruise.

hair shedding camps. Thousands upon thousands of harp seal run in. On the ice they may pack so tightly that a dark ribbon is formed, stretching along the whole horizon ("seal ribbon"). The shedding lasts about 2 weeks. Thereafter, they start their summer migration, and they go after capelin in particular.

The seals belonging to the Eastern Polar Ice population migrate along the edges of the ice to different parts of the Barents Sea. A large number migrate towards Novaja Zemlja, while others head towards Spitsbergen, Hopen and Bjørnøya. It is this part of the population which was observed from "Lance".

Figure 6

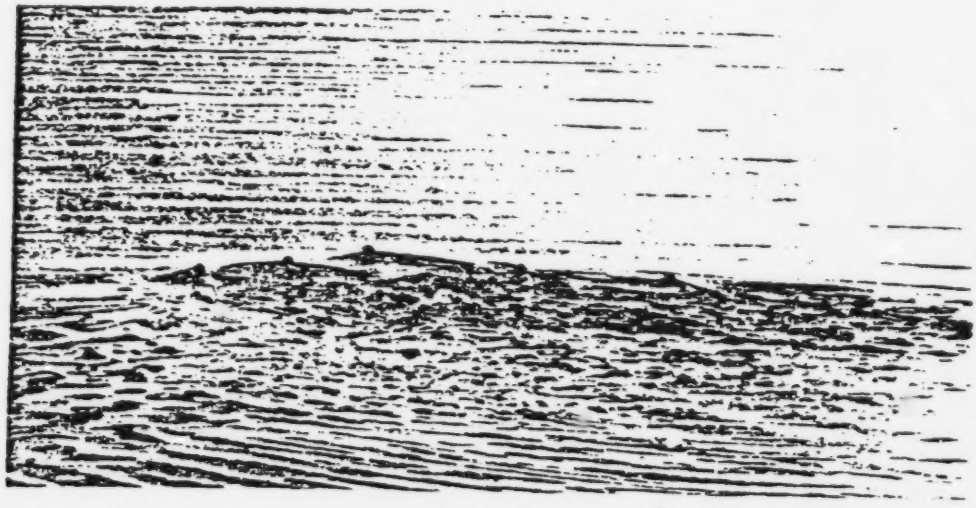


Fig. 6. Flokk med trekkende grønlandssel i åpent hav. Bildet er tatt 26.8.1981 i russiske farvann SV av Frans Josefs Land. (Foto: Viggo Ree)

Flock of migrating harp seals in open sea. The photograph was taken on 26.8.1981 in Russian waters SW off Franz Josefs Land.

In 1981 the species was found in large concentrations between Northeastland and Franz Josef Land. The herds were usually about 50-100 animals, and a total of 6,000 harp seals were observed (see Fig.6). Of these, only one individual was observed lying on the ice. 111.

No similar concentrations were found in 1982. The herds rarely contained more than 10 individuals. The species appeared to be scattered around the whole archipelago that year. On the first cruise about 100 harp seals were observed on Sjubrebanken west of Spitsbergen (open water). On the other cruise the species was seen north and east of Svalbard, a total of 400 animals.

Bearded seal

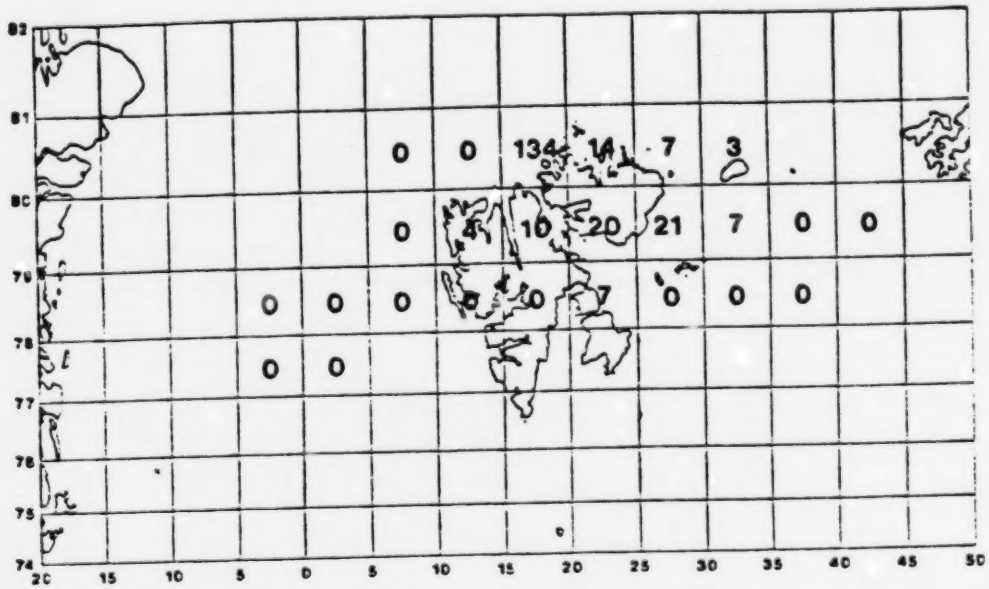
The bearded seal lives spread over large parts of the Arctic. It prefers inshore areas and shallow banks where it can feed on bottom animals. During the whelping period (April-May) no special concentration occurs. The pups are born on the ice, scattered over favourable areas. At birth they have a dense brownish woolly coat. Shedding begins immediately after a few days and the young harp seals go early to sea. The nursing period lasts about 3 weeks and in this period a harp seal's weight almost triples (from 30 kg to about 85 kg). The harp seal also differs from the other true seals by the female having a pup every second year. The shedding of hair lasts from April to August.

During the winter the bearded seal can only keep its breathing hole open in relatively thin ice. This means that it migrates from the thick permanent winter ice and seeks areas with drift ice and leads in the ice.

The results of the observations of bearded seal on the two expeditions in 1981 and 1982 are shown in Figures 7 and 8. The species was found spread in fiords (see Fig.9) and inshore areas north and east of Spitsbergen. Special concentrations were found in favourable areas, particularly around Northeastland, and the species was also found on shallow banks in the Barents Sea between the Svalbard archipelago and Franz Josef's Land.

In 1982 the bearded seal was also observed in the north westerly portion of the Greenland Sea. A total of 35 individuals were sighted on shallow banks SSE of Northeast Foreland (NE tip of Greenland) during the period 29-31.7. This occurrence is interesting. In this area there is a permanent large back eddy with a current of water from shore. Satellite pictures indicate that ice-free waters can be found here even throughout the winter (Vinje 1982b, see also Fig. 2) and among ice researchers it is characterized as a warm weak area. For instance, during the winters of 1980-81 and 1981-82, the water here was open. The presence of the bearded seal in this area also indicates ice-free waters or areas with thin ice during the winter. This is because it is not likely that such a species would migrate through the thick and dense ice-mass further

Figures 7 and 8



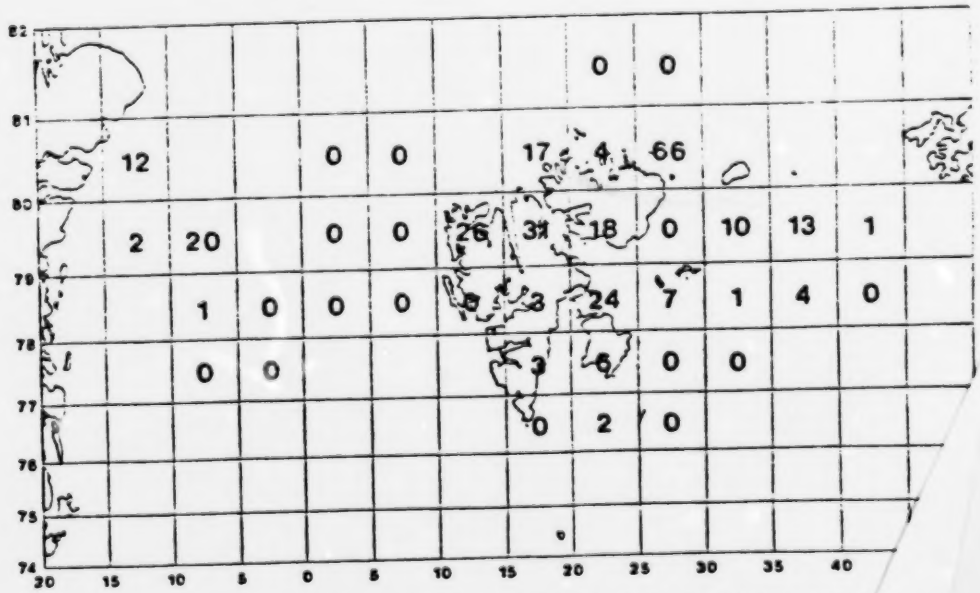


Fig. 7 (øverst). Antall observerte storkobber i 1981. Med unntak av ett individ ble samtlige 227 sett på tokt 2.

Fig. 8 (nederst). Antall observerte storkobber i 1982 (271). Under tokt 1 ble 35 dyr sett i Grønlandshavet, mens 236 ble observert under tokt 2.

Fig. 7 (top). Numbers of observed bear 1981. All 227 except one were seen d cruise.

Fig. 8 (bottom). Numbers of observe in 1982 (271). During the first cruise seen in the Greenland Sea, while 2 during the second cruise.

south in the Greenland Sea every fall and spring. Any shallow overwintering areas would then lie a considerable distance from the summer habitat.

It is possible that this involves an isolated bearded seal population. It was also very interesting to note that these animals exhibited completely different behaviour than other bearded seals observed around Svalbard. While the Svalbard animals are very trusting vis-a-vis the boats (often do not go in the water until observer is at a distance of 10 - 100 m), the bearded seals in the Greenland waters disappeared down into

Figure 9

Fig. 9 Hvilende storkobbe på kalvet breis i Kongsfjorden juli 1983. I bakgrunnen sees Blomstrandbreen. (Foto: Fridtjof Mehlum)

Resting bearded seal on glacier ice floe in Kongsfjorden July 1983. In the background a part of the Blomstrand glacier

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breathing holes and cracks already at a distance of several hundred meters (up to 2 km). This shy behaviour is difficult to explain. In this area no hunt takes place (no settlements), and several years may pass between the times that a vessel can make it in there. Normally, under such circumstances it would be expected that the animals would be very trusting.

Hooded seal

The hooded seal is a typical marine seal which prefers large packed drift ice. The area of spread stretches from Svalbard and Jan Mayen in the east, via the Strait of Denmark and the Davis Strait to Newfoundland in the west. At around the middle of March the hooded seals gather to whelp. The 4 large whelping areas are: (1) Jan Mayen (West Ice), (2) outside the mouth of the Hudson Strait (Davis Strait), (3) off Newfoundland and (4) the Gulf of St.Lawrence (inside Newfoundland).

The woolly coat of the pup is lost before birth, so that the hooded seal pup has short stiff covering hair. The colour is bluish grey on the upper side, (therefore the name "blueback") and almost white on the underside. The pup suckles for about 10 days and then the mother leaves. Since it has no woolly coat it quickly gets used to the water. Already after two to three weeks it finds food on its own.

Mating takes place right after the females have left their young. In April the adult hooded seals leave the whelping area and spread out over wide-ranging drift ice areas. In June

Figures 10 and 11

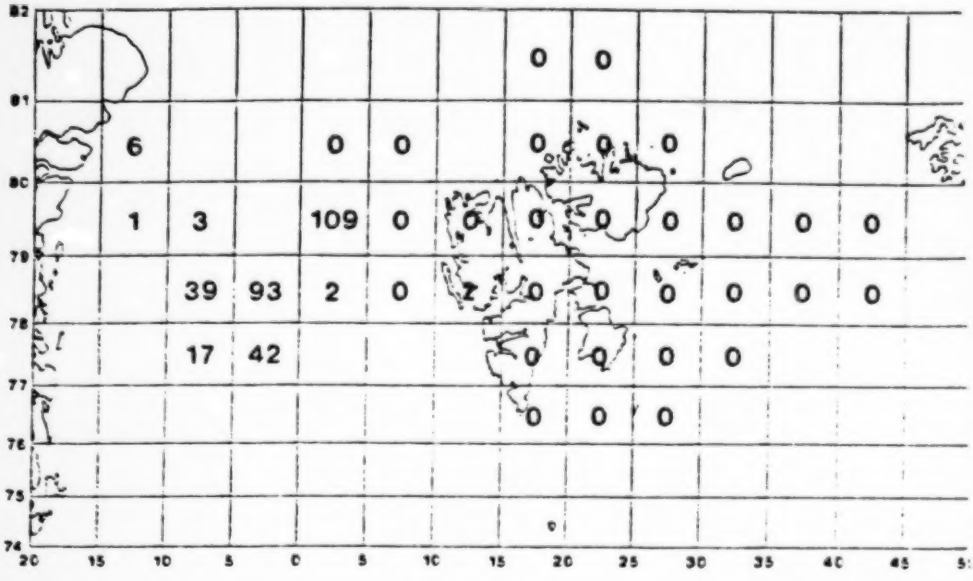

Fig. 10. Antall observerte klappmyss i 1982. Samtlige 314 dyr ble sett under tokt I i Grønlandshavet.

Number of observed hooded seals in 1982. All 314 animals were seen during the first cruise in the Greenland Sea.

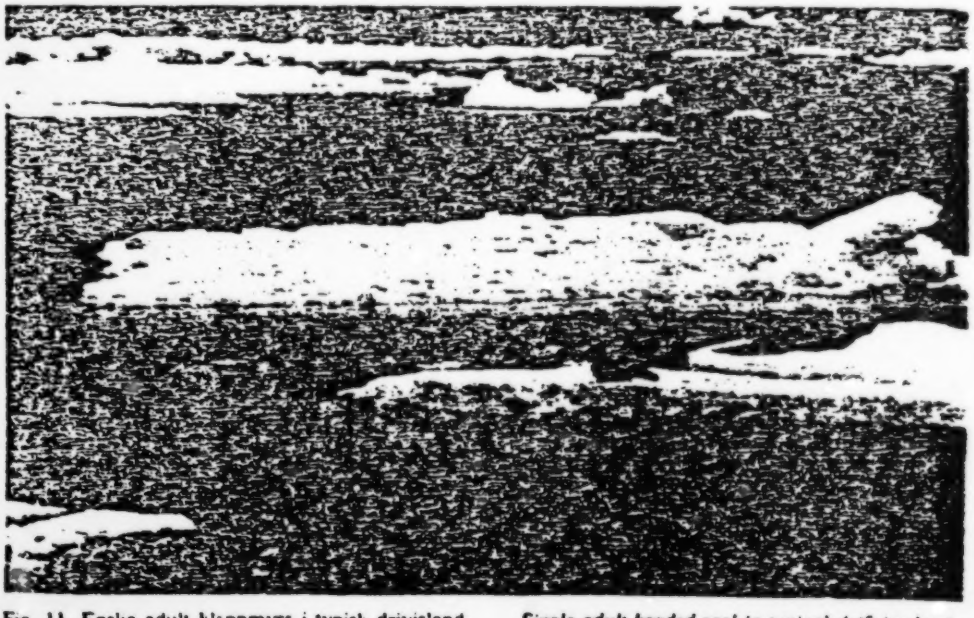

Fig. 11. Enslig adult klappmyss i typisk drivisland-skap. Bildet er tatt 25.7.1982 i de sentrale deler av Grønlandshavet, hvor det er ca. 3000 meter ned til havbunnen (Foto: Viggo Ree).

Single adult hooded seal in typical drift ice landscape. The photograph was taken 25.7.1982 in the central parts of the Greenland Sea, where it is about 3000 metres to sea bottom.

they gather in large herds on the ice to shed hair. The greatest hair shedding area is in the Strait of Denmark (between Iceland and Greenland) and the animals migrate towards it from all the whelping areas. The hooded seals prefer to bask in the sun and rub the old hair off against the ice. At the end of July the hair shedding areas are left and the Jan Mayen population spreads out on the drift ice area between Greenland and Spitsbergen.

In 1981 relatively few hooded seals were seen in the Greenland Sea. This was due, primarily, to bad weather and ice conditions. A total of about 40 animals were observed, most of these in the area around 78°N 03°W. 115.

In 1982 the ice conditions were far more favourable and a total of 314 animals were sighted. The areas having hooded seal occurrences are shown in Figure 10. A large portion of these animals were young individuals (juveniles and yearlings). These areas must therefore be assumed to be favourable adolescence areas.

The species was usually observed singly (see Fig.11) or in small groups of up to 5 animals. Characteristic resting places were on rises in the ice landscape where the animals had a good view and the distance to water was short.

WHALES

In the course of the two summer seasons, a total of 88 whales (48 toothed whales, 40 baleen whales) were recorded. Of these, 82 animals were species-determined to the following

4 species: beluga (Delphinapterus leucas) narwhal (Monodon monoceros), minke whale (Balaenoptera acutorostrata) and fin whale (Balaenoptera physalus).

During the "Ymer" expedition in 1980, relatively few whales were seen in the same marine areas north of Hopen, apart from pods of 100 and 5 belugas, respectively. A total of 13 animals were seen, 6 of which were killer whales (Orcinus orca) and two possible humpback whales (Megaptera novaeangliae) (Hammar 1982b). These two species can be seen in the waters around Svalbard during the summer but were not observed during the "Lance" cruises.

The Greenland whale, Balaena mysticetus, was not observed in 1981 and 1982, neither was it seen during the "Ymer" expedition in 1980. However, one dead individual attracting about 60 polar bears (Ursus maritimus), was found during one of the "Norvarg" cruises that same year (Christiansen 1981). Once, the Greenland whale was very numerous in the waters around Svalbard, but these populations have probably been wiped out. Only 9 live animals have been sighted in the NE Atlantic since the Second World War, of which 3 have been close to Svalbard (Jonsgård 1982).

Of the 4 whale species observed during the Svalbard expeditions in 1981 and 1982, only the beluga and the narwhal live their whole life in arctic waters. These species have no back fin and therefore can move with ease under the ice. Another adaptation to the arctic environment is an especially

Figure 12.

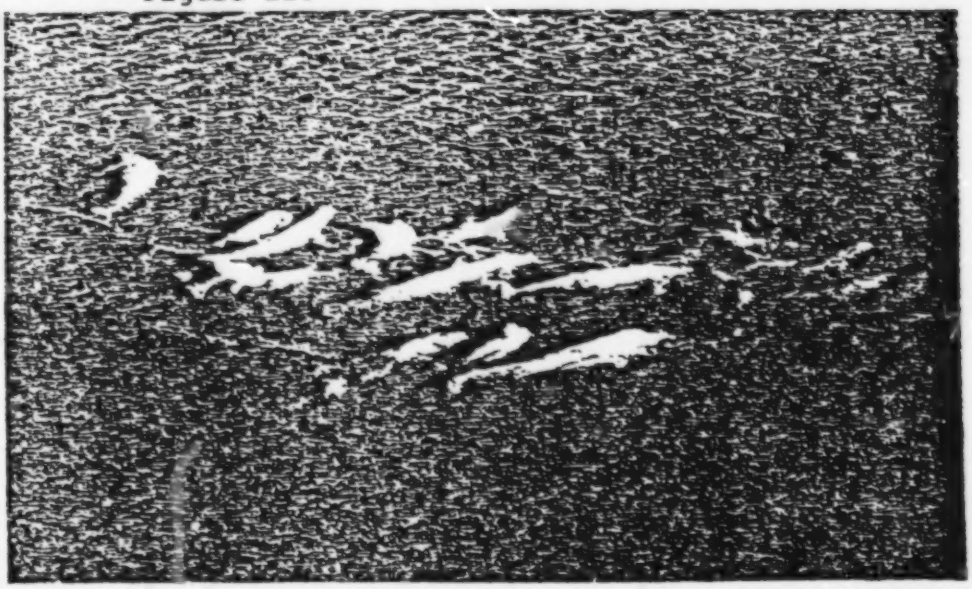

Fig. 12. Flokk med hvithval fotografert fra helikopter inne i Nordenskioldbukten på nordsiden av Nordaustlandet 29.8.1982. De mindre gråligge individene er ungdyr. (Foto: Fridtjof Mehlum)

Flock of belugas photographed from helicopter in Nordenskiöldbukten at the northern side of Nordaustlandet 29.8.1982. The smaller and greyish individuals are young animals.

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thick skin and layer of blubber. The size of the animals is 4-6 meters. The young are nursed for one and a half years, and the females have one young every third year.

Beluga

The beluga received its name from the snow-white skin 116.
colour. It is also called the "canary of the ocean", due to

the beautiful songbird-like whistling sounds which it can produce. Of all the marine mammals, belugas have the most developed sonar system. With a large repertoire of sounds, they can communicate with each other. The animals are very sociable and often appear in large groups.

In the winter half of the year, the belugas stay around the south-eastern Barents Sea. During the summer they follow the edge of the ice and can then be observed in waters around Svalbard and Franz Josef Land.

Every single year, particularly during the winter, Norway is visited by the belugas. It is primarily the northern provinces that are visited. On rare occasions they also appear along the coast of Southern Norway. The latest observation was one individual seen in the inner Oslofjord in September 1983. On such cruises towards the south, they often migrate up large rivers. This usually worries the sports fisherman, but much indicates that the belugas eat very little food under such circumstances.

Belugas were observed twice in the course of the two summer expeditions. On August 22, 1981, 4 individuals were found in Hinlopen at the mouth of the Wahlenberg fiord. From the helicopter, a pod of about 40 animals (of which 25 were adults and 15 young) were seen in Nordenskiold Bay on the north side of Nordaustland on 29.8.1982 (see Fig.12). The belugas are traditionally a fiord species and may be difficult to discover from a boat. The meager observations of this species

recorded on the "Lance" (no belugas were observed from the "Ymer" in 1980) have led to a speculation whether the side-scan sonar may have contributed to scaring the animals away. This is an interesting point and should be investigated further.

Narwhal

The spread and biology of the narwhal is very much like that of the beluga. The narwhal males, however, have a supernatural appearance. The left upper tooth in the upper jaw develops into a spiral tusk which may be as long as 2.5 m. Older males therefore resemble the unicorn and of course 117.
have been connected with many myths (Haug 1982).

Only one observation of this species was recorded in the course of the two summers. Four animals (including 2 females and one young) were seen at the head of the Hartog Bay on the east side of Nordaustland on 30.8.1982. This is the area where the Brasvell glacier comes right down into the ocean.

Minke whale and fin whale

Minke whales and fin whales are foraging for food during the summer season and can thus often be found in or near the drift ice in the Svalbard area. These two species may, in some cases, be difficult to distinguish from each other. This applies particularly during unfavourable weather conditions and at long distances. Some of the observations concern unidentified baleen whales which most likely were minke or fin whales. A total of 12 baleen whales were sighted in the open

waters west-northwest of Spitsbergen during the 1981 period (5 - 19.8). Of these, 4 minke and 3 fin whales were determined with certainty.

In 1982 a total of 28 baleen whales were sighted. Of these, 15 minke and 4 fin whales were observed west of Spitsbergen during the period 22.-25.7 during the first cruise (see Fig. 13). All these, with the exception of 2 minke whales, were seen in open water. One minke was sighted in a lead far into the drift ice at 79°34'N 01°34'E on the 25.7, while a further one was recorded at the edge of the drift ice later that same day.

Figure 13

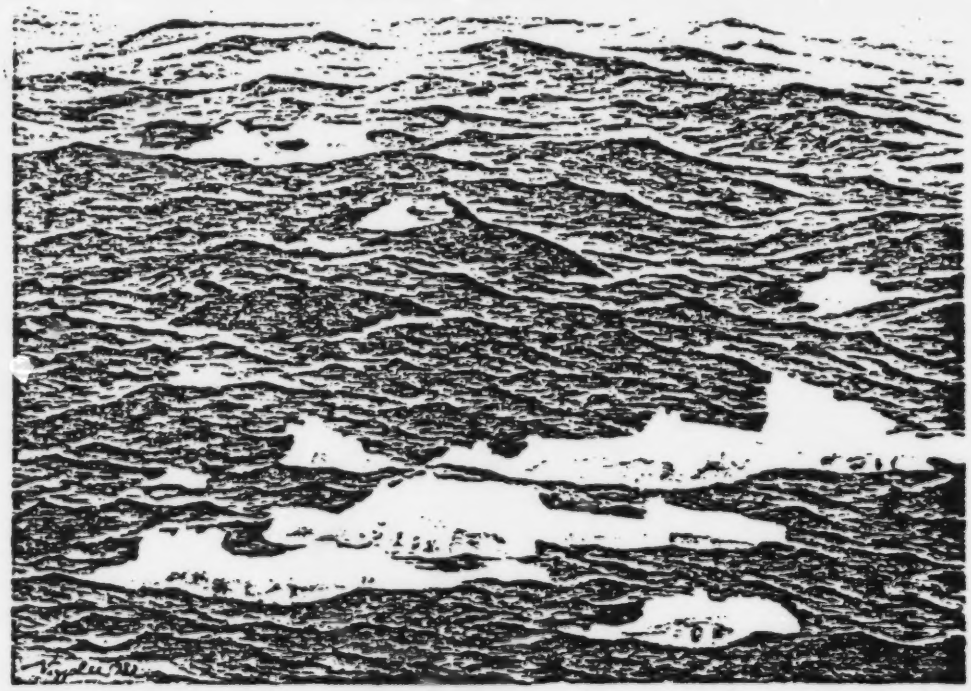

Fig. 13. Vågehval i drivis. Etter feltskisser i Grønlandshavet juli 1982. (Reprodusert etter akvarell av Viggo Ree).

Minke whales in drift ice. After field sketches in the Greenland Sea July 1982. (Reproduced after water colour by Viggo Ree).

On the other cruise, an undetermined baleen whale was seen north-east of Hopen on 18.8. This was the only observation of baleen whales on the east side of Svalbard in the course of the two summer expeditions. Eight minke whales were observed on the Forlands Bank on 2.9.

FINAL COMMENTS

Behind the figures presented in this article are hours of observation time onboard "Lance". The work was, as far as possible, carried out continuously, primarily from the upper deck. The results show no occurrences of Greenland whale and some scattered finds of walrus, both of which species used to be sighted in the tens of thousands around the archipelago some hundred years ago.

The numeric material for the other species only provides an indicator of the size of the populations and their present spread. In order to obtain a satisfactory count, an effort many times greater than that which has so far been carried out on the "Lance" cruises, is required. Reasonable and proper management of the arctic marine mammals is therefore dependent on continuous and, preferably, increased research in our northern regions.

THANK YOU

We extend our thanks to the crew of "Lance" and the helicopter pilots for their valuable help with the observations.

The observers during the expeditions were:

1981. Cruise I: VR.

Cruise II: Arthur Arnesen, VR, KIU.

1982. Cruise I: Siri Bremdal, John Frikke, Hans Meltofte, VR, KIU.

Cruise II: Ole Norden Andersen, Erik Born, Jan Gjertz, Thor Larsen, Bjørn Linneholt, Fridtjof Mehlum, VR, Ragnar Syvertsen, KIU.

Thanks for their commentaries on the manuscript are extended to Erik Bleken, Thor Larsen and Roar Solheim. John Stenersen jr. was kind enough to make black-and-white copies of slides and Geoffrey Acklam checked the English text.

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